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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,434	06/19/2006	Miezi Sugiyama	284583US0PCT	7436

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EXAMINER	
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ART UNIT	PAPER NUMBER
1797	

NOTIFICATION DATE	DELIVERY MODE
12/11/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/564,434	SUGIYAMA ET AL.	
	Examiner	Art Unit	
	Lessanework Seifu	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 8-12* is/are rejected.

7)☒ Claim(s) *7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 5-6 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitations recited in claims 5-6 are directed to an intended use, which do not structurally further limit the claimed apparatus.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Colling et al. (WO 00/17946).

Regarding claims 1 and 4-6, Colling et al. disclose a fixed-bed multitubular reactor (10), comprising: a plurality of reaction tubes (120) to be packed with a catalyst (see page 3 line 10); and catalyst temperature measures (150) equipped to measure the temperature near the center part in the radial direction of the reaction tubes, the catalyst temperature measures (150) being installed in a part of the plurality of the reaction tubes (see page 6, lines 6-14), the measurement positions thereof being different from each other in the longitudinal direction of the reaction tubes (see page 6,

lines 15-21). With respect to the newly added recitation, Colling et al. in Figure 3 shows that the plurality of reaction tubes are arranged so as to be adjacent to each other to form the fixed-bed multitubular reactor, which can equally be characterized as one reaction tube group. As previously mentioned, Colling et al. disclose that the catalyst temperature measures (150) can be installed in a part of the plurality of the reaction tubes (see page 6, lines 6-14). Accordingly, applicants claimed fixed-bed mulititubular reactor is anticipated by Colling et al.

Regarding claims 4-6, limitations recited in the claims which are directed to an intended use of the claimed apparatus do not structurally further limit the apparatus claim. Neither the manner of operating a device nor a material or article worked upon further limit an apparatus claim. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See Ex parte Thibault, 164 USPQ 666,667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

3. Claims 1 and 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsumoto et al. (US 2003/0006026).

Regarding claims 1 and 4-6, Matsumoto et al. disclose a shell-and-tube reactor, which can be characterized as applicants' fixed-bed multitubular reactor, comprising substantially all of the features as recited in claim 1. Matsumoto et al. disclose a plurality of reaction tubes (102) which may be packed with a catalyst (see Fig. 1 and parag. 0075]); and temperature measures (121, 221) being equipped to measure the

temperature near the center part in the radial direction of the reaction tubes (see parag. [0063]). Figures 1 and 2 of the reference Matsumoto et al. further show that the plurality of reaction tubes are arranged so as to be adjacent to each other to form a fixed-bed multitubular reactor, which can equally be characterize as applicants' at least one reaction tube group. Matsumoto et al. further teach that the temperature measures are installed in the reaction tubes such that the measuring reaction tubes equipped with the temperature measures are preferably uniformly arranged in the shell so as to accurately grasp the temperature profile of the whole reaction tube (see parag. [0030]). Accordingly, applicants claimed fixed-bed mulititubular reactor is also anticipated by Matsumoto et al.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 2, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colling et al. (WO 00/17946).

Regarding claim 2, Colling et al., as shown in claim 1 rejection above, meet the limitations of claim 1. Colling et al. are, however, silent with respect to the exact number of reaction tubes to be equipped with thermocouples (temperature measures) out of a selected number of reaction tubes that are adjacent to each other. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have equipped any desired number of reaction tubes with thermocouples out of a group of selected number of adjacent reaction tubes, including in a configuration as claimed, sufficient for evaluating temperature conditions among the plurality of reaction tubes in a fixed-bed reactor such as those disclosed in Figs. 2 and 3 of Colling et al. through a mere routine experimentation and optimization based on the teachings of Colling et al. See MPEP 2144.05.

Regarding claim 9, Colling et al., as shown in claim 1 rejection above, meet the limitations of claim 1. Colling et al. further disclose that the length of the reactor tubes may vary in size and may exceed 20 feet in length. The limitation recited in claim 9 regarding the length in size of the reaction tubes is not a patentable distinction over the prior art because, a change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955). Where the only difference between the prior art and the claims is a recitation of relative dimensions of the claimed device, and the device having the claimed dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device, Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984).

Regarding claim 10, Colling et al., as shown in claim 1 rejection above, meet the limitations of claim 1. Colling et al. further disclose that temperature measures can be positioned in a selected number of reactor tubes (see page 4, lines 15-22) and that the temperature measures may be position at a desired point along the entire length of the reactor tubes (see page. 6, lines 6-11). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the temperature measures in the reference Colling et al. at any desired selected position along the entire length of the reactor tubes, including in the set intervals as claimed, sufficient to provide temperature measurements at any selected desired points.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Colling et al. (WO 00/17946) as applied to claim 2 above, and further in view of Olbert et al. (WO 00/54877).

Note: The reference made below to Olbert et al. is to U.S. Patent No. US 7,226,567 which an equivalent of the reference WO 00/54877 above.

Regarding claim 3, the claim depends from claim 2 such that the reasoning applied to claim 2 above is applied herein for the dependent portion of the claim. Colling et al. are, however, silent with respect to the flow patterns of the heat medium being different in the reactor. However, the limitation recited in claim 3 regarding the plurality of the reaction tube groups being allocated in the reactor in the manner as claimed is not a patentable distinction over the prior art. As evidenced by the reference Olbert et al, it is conventional in the art to position the plurality of reaction tubes in a fixed-bed multitubular reactor in positions where a heat medium is forced to flow in different flow patterns (see Fig. 2 of the reference Olbert et al.).

6. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al. (US 2003/0006026) or alternatively, as being unpatentable over Matsumoto et al. and Colling et al. (WO 00/17946).

Matsumoto et al. disclose a shell-and-tube reactor, which can be characterized as applicants' fixed-bed multitubular reactor, comprising substantially all of the features as recited in claim 1. Matsumoto et al. as shown previously, disclose a plurality of reaction tubes (102) which may be packed with a catalyst (see Fig. 1 and parag. 0075]); and a temperature measures (121, 221) being equipped to measure the temperature

near the center part in the radial direction of the reaction tubes (see parag. [0063]). Figures 1 and 2 of the reference Matsumoto et al. further show that the plurality of reaction tubes are arranged so as to be adjacent to each other to form a fixed-bed multitubular reactor, which can equally be characterized as applicants' at least one reaction tube group. Matsumoto et al. further teach that the temperature measures are installed in the reaction tubes such that the measuring reaction tubes equipped with the temperature measures are preferably uniformly arranged in the shell so as to accurately grasp the temperature profile of the whole reaction tube (see parag. [0030]). Matsumoto et al., however, do not specifically address as to how to arrange the measuring reaction tubes such that the measuring reaction tubes are uniformly distributed in the shell of a shell-and-tube reactor. Colling et al., as mentioned above, disclose a fixed-bed multitubular reactor with features substantially as recited in claim 1. Colling et al. are, however, silent as to how the reaction tubes equipped with the catalyst temperature measures are arranged in the multitubular reactor. It would have been obvious to one having ordinary skill in the art at the time the invention was made, in view of the teachings of Matsumoto et al, to envision segmenting the plurality of reaction tubes into a plurality of reaction tube groups of any desired shape and configuration, including in configurations as claimed, for the purpose of uniformly arranging the temperature measuring reaction tubes in the multitubular reactors of Matsumoto et al. or Colling et al.

Response to Arguments

7. Applicant's arguments filed September 26, 2008 have been fully considered but they are not persuasive.

Applicants' argument that the limitation "at least one reaction tube group" recited in claim 1 (See Remarks at page 7) distinguishes applicants claimed reactor from the prior art is not persuasive. Although, Colling et al. disclose that the reaction tubes 120 are spaced apart such that there is space 135 between each and every reactor tube 120 (see page 5, line 26-27), the same apparatus described by Colling et al. reads on all of the limitations recited in claim 1. Colling et al. in Figure 3 shows that the plurality of reaction tubes 120 being arranged, though spaced apart from each other, so as to be adjacent to each other to form the fixed-bed multitubular reactor. The fixed-bed multitubular reactor of Colling et al. can equally be characterized as applicants' "at least one reaction tube group". Accordingly, the claimed invention as recited in claim 1 is anticipated by the prior art.

Allowable Subject Matter

8. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to disclose or suggest a plurality of heat medium bath

temperature measurers being provided at the same height as the measurement positions of the catalyst temperature measures.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lessanework Seifu whose telephone number is (571)270-3153. The examiner can normally be reached on Mon-Thr 7:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. S./
Examiner, Art Unit 1797

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797